



MEETING OF THE

WATER POLICY TASK FORCE

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Tribal Government Representative: Andrew Masiel Sr., Pechanga Band of Luiseno Indians

Ventura County: Linda Parks, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Art Brown, Buena Park

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

Thursday, November 29, 2007

10:00 a.m. – 1:00 p.m.

SCAG Offices

**818 West 7th Street, 12th Floor
San Bernardino Conference Room
Los Angeles, CA 90017
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If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Dan Griset at 213.236.1895 or griset@scag.ca.gov

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DOC# 141910

Agenda
WATER POLICY TASK FORCE
November 29, 2007
Conference Room – San Bernardino A&B

Page #

1.0 CALL TO ORDER

2.0 PUBLIC COMMENT PERIOD

Members of the public desiring to speak on an agenda item or another item, but within the purview of this Task Force, must notify staff to the Task Force prior to the meeting. At the discretion of the Chair public comments may be limited to three minutes.

3.0 APPROVAL OF MINUTES

Action Minutes for the September 20, 2007 meeting will be available at the meeting and posted on the Task Force website (<http://scag.ca.gov/wptf>).

4.0 PRESENTATION ITEMS FOR THE TASK FORCE

4.1 Taking Environmental Protection Up to the Next Level

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Bruce McDowell, Senior Fellow of the National Academy of Public Administration, will review the findings of a recent study done for the United States Environmental Protection Agency. The study, "Taking Environmental Protection to the Next Level" recommended partnership and collaboration approaches as more effective at system improvements when compared with command-and-control regulation and project-centered strategies.

4.2 SCAG Strategy Paper: Water and California's Future – Getting Into the Bigger Picture of Growth, Resources, Sustainability

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Staff has prepared a policy paper on policy themes for regional sustainability that is intended for consideration by the Energy and Environment Committee (EEC) at its December 6, 2007 meeting. The Task Force is asked to review the paper and endorse its recommendations prior to the EEC's consideration of the paper.

4.3 Proposed Ventura County Stormwater Permit

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The Los Angeles Regional Water Quality Control Board has proposed a new stormwater permit for Ventura County and its cities. This permit includes new provisions that will create additional responsibilities and costs for the local governments in the County. Jeff Pratt, Director of the Ventura County Watershed Protection District, and Xavier Swamikannu, Chief of the Stormwater Permitting Program at the Regional Board, will discuss this proposed permit. Also present for some dialogue with the Task Force will be Tracy Egoscue, the new Executive Officer of the Regional Board.

4.4 The Connection between Water, Food and Agriculture, Growth and Climate Change 12

Eric Stein, Deputy Secretary of Legislation and Policy of the California Department of Food and Agriculture, will brief the Task Force on the relationship between water resources and food production, as well as the looming connection between agriculture and urban growth and climate change.

4.5 An Update on the California Green Building in the SCAG Region 13

Dr. Mark Grey, Director of Environmental Affairs for the Southern California Building Industry Association and Task Force member, will report on the Green Building Program sponsored by the California Building Industry Association. The Program has water conservation and other resource sustainability goals.

5.0 CHAIR'S REPORT

6.0 STAFF REPORT

7.0 TASK FORCE INFORMATION SHARING

8.0 COMMENT PERIOD

10.0 ADJOURNMENT

The next Task Force meeting will be held on January 24, 2008 at the SCAG offices.

MEMO

DATE: November 29, 2007

TO: Water Policy Task Force

FROM: Daniel E. Griset, Program Manager, 213.236.1895, griset@scag.ca.gov

SUBJECT: Taking Environmental Protection Up to the Next Level

BACKGROUND:

The United States Environmental Protection Agency (USEPA) invited the National Academy of Public Administration (NAPA) to make recommendations on ways to improve environmental protection in watershed systems. NAPA focused its efforts on the Chesapeake Bay watershed, probably one of the most complex watershed systems in the country, one that ranges across 7 states and that includes many tributaries flowing through every conceivable land use.

The recently released report strongly favors the use of collaborative partnerships as a more appropriate way to achieve needed water quality outcomes for the Bay's environmental health. Associated with this approach is a strong recommendation for the kind of comprehensive system planning that aligns and prioritizes projects based on their support of the overall improvement of the watershed, not just their individual outputs as determined by cost-benefit calculations. The report notes that "it is time to apply a much broader set of remedies" developed through a "unique combination of scientific studies, interstate policies, stakeholder partnering, and best practice innovation" to restore the Bay. All of this portends a new era of "outcome-oriented water quality improvements that can bring clean and healthy waters within reach throughout the United States."

The Report notes the following challenges for USEPA and environmental regulators: EPA faces six great challenges. They grow largely out of the need to clean-up ambient environmental conditions, not just large single sources of pollutants. This shift in emphasis makes EPA's job much more difficult—and different—than in the past.

Challenge 1: Addressing the Complexity of Meeting Ambient Environmental Goals

To meet this challenge, EPA will need to use a much broader range of implementation programs and engage a much wider range of implementation partners.

Challenge 2: Mobilizing Multiple Programs, Federal Agencies, State and local Governments and Other Parties to Meet Ambient Environmental Standards

Programs that target nonpoint sources of pollution need to be more fully developed and deployed, and brought to a level of maturity, funding and priority more nearly equal to the programs that target point sources. Much of the groundwork has been laid to support this upgrade.

Challenge 3: Filling the Widening Gap in Funding Environmental Programs

Many environmental programs have identified what needs to be done to meet clean-up standards. What's holding them back is a lack of funding. The funding gap is widening, not narrowing.

Challenge 4: Filling the Tools and Authority Gap

The "tools of government" needed to implement environmental changes are well known, and new ones are being developed all the time. Mainstreaming more of these tools could go a long way toward meeting the currently unmet needs.

Challenge 5: Adapting Management Techniques to Focus on Outcome Goals

Managing for results requires much more data, better data, and more timely data than traditional management systems produce. EPA's National Performance Partnership System (NEPPS) has been under development for over a decade, but still needs more work.

Challenge 6: The Need to examine Alignment in Multiple Program Areas

The specific recommendations in this report are for water pollution control programs. But, it is likely that other EPA programs need similar improvements. The approach used in this study could be helpful in improving other federal programs.

The Report's response to these challenges resulted in the following findings:

Recommendation 1: EPA as a Partnering Agency

EPA should strengthen its position as a partnering agency for purposes of enhancing all its programs, both regulatory and non-regulatory. This is especially important for non-regulatory programs.

Recommendation 2: Healthy Waters Comprehensive Approach

EPA should establish a more systematic and holistic intergovernmental approach to cleaning up the ever-increasing number of listed impaired waters throughout the nation. This approach should bring nonpoint programs up to par with point-source programs.

Recommendation 3: Effective Coordination Mechanisms to Support Partnerships

EPA should encourage and support the intergovernmental coordinating bodies needed to ensure that regional initiatives can effectively accomplish established water pollution reduction outcomes.

Recommendation 4: Scientific Research and Data

EPA should preserve its commitment to scientific research and data as a basis for policymaking and evaluation.

Recommendation 5: Adequate and Sustainable Funding

EPA should work with the state and local governments, and others, to put the financing of environmental services on a more adequate and sustainable path, by: broadening the purposes and revenue sources of the State Revolving Fund program; developing models and guidelines for dedicated fee-based systems; providing leadership for pollution credit-trading; partnering with other federal agencies; and working with Congress.

Recommendation 6: Access to Innovation

Innovative programs should be made readily available more quickly to policymakers, program directors, and implementation organizations.

Recommendation 7: Performance and Results

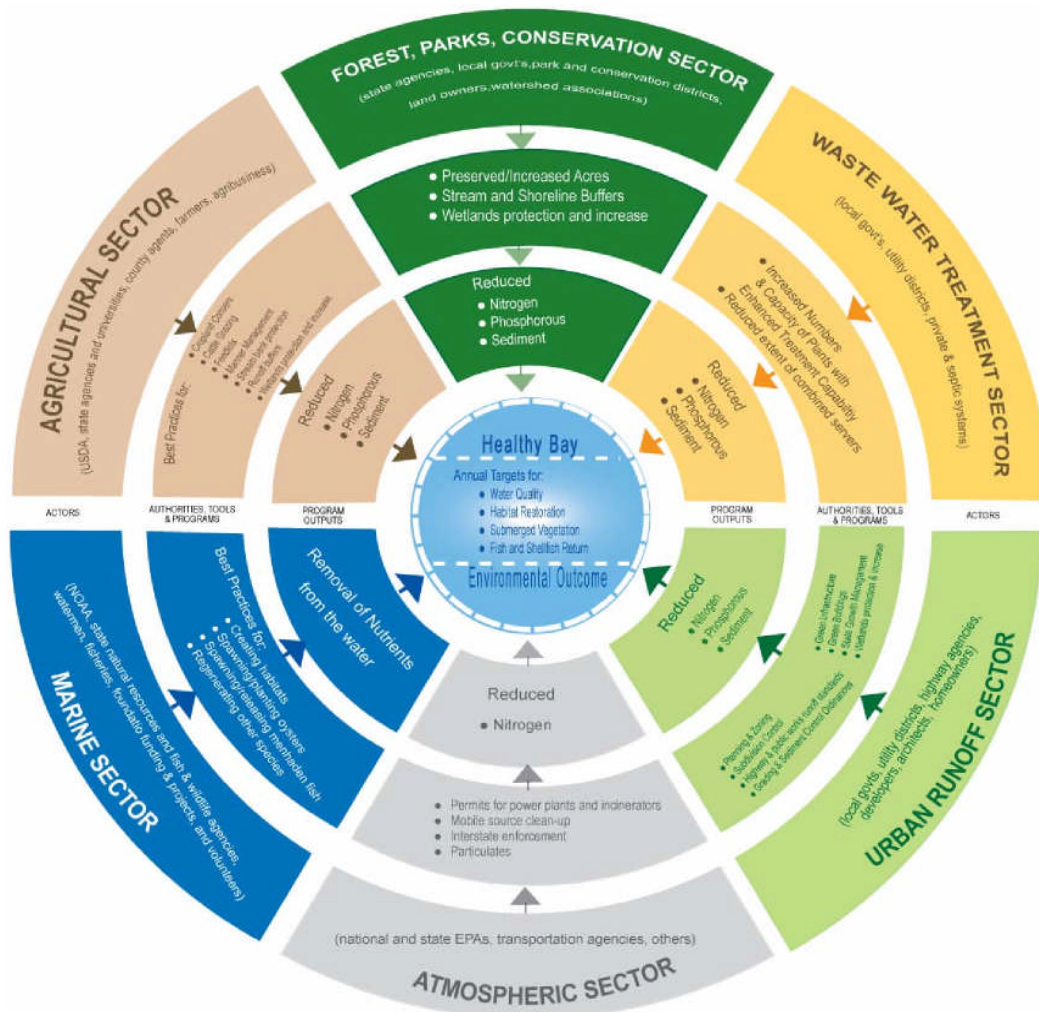
EPA should continue to improve its outcome-oriented performance management systems by incorporating timely new accountability mechanisms for inputs, outputs and outcomes provided by both traditional and non-traditional partners.

Recommendation 8: Examine Alignment in Other Federal Programs

EPA and other federal agencies should re-evaluate the alignment of partners, tools, and coordinating mechanisms within their partnership programs, using the analytical framework developed for this study.

One of the figures in the NAPA report is shown below. It provides a visual depiction of the various elements to be considered in a comprehensive approach to water quality in the Chesapeake Bay. Without this full range of elements it will be difficult to achieve any material success in better environmental protection in urbanized watersheds.

**FIGURE 10. The Composite Logic Model Needed to Produce a Healthy Chesapeake Bay
(Clean up its Impaired Waters is Very Complex)**



These recommendations track closely with the direction recommended in the policy and strategy paper presented in the next agenda item (4.2). It underscores the importance of bringing partners together to better meet the goals of environmental improvements and sustainability.

FISCAL IMPACT:

The consideration of this topic creates no fiscal impact on SCAG. Staff support for the Water Policy Task Force is funded through work elements in the OWP (Environmental Planning and the Regional Comprehensive Plan).

REPORT

DATE: December 6, 2007

TO: Water Policy Task Force

FROM: Daniel E. Griset, Program Manager, 213.236.1895, griset@scag.ca.gov

SUBJECT: Comprehensive Regional Infrastructure and Growth Planning Policy and Strategy

RECOMMENDED ACTIONS:

Ask the Energy and Environment Committee to:

1. Approve release of the attached, draft policy paper, “Water and California’s Future: Getting into the Bigger Picture of Growth, Resources and Sustainability,” for review and comment by interested parties.
2. Authorize SCAG staff to develop a coalition of California regions in support of policy actions contained in the draft policy paper, including the following actions:
 - Integration of infrastructure and resource management planning within a performance-based regional *Blueprint* planning framework
 - Dedication of state and federal funding to advance regional *Blueprint* and related local planning efforts that advance system-wide environmental sustainability
 - Priority state and federal funding for projects that coordinate with comprehensive regional *Blueprint* and related local planning and that are financially constrained, performance-based and leverage local and private sector investments.

BACKGROUND:

At the Energy and Environment Committee meeting on August 30, 2007 staff briefed the Committee on a “Proposed Program to Promote Comprehensive and Integrated Water Resources Planning in the Region” to obtain member feedback. Since then staff has, in coordination with preparation of the Water Chapter in the Regional Comprehensive Plan, prepared a draft policy paper that further develops the concepts presented in August. (See attached policy paper.) The Water Policy Task Force will consider this draft at its meeting on November 29, 2007.

The key idea driving this effort is the need for a policy framework that provides California regions with the tools and resources to do the kind of comprehensive, integrated planning that can be used to better guide continuing regional growth towards more sustainable futures and community success. Though some infrastructure efforts recognize the need for greater integration of planning

and implementation within watershed and other larger-scale areas, these advances do not address the overall growth challenges and the need for new approaches to better guide project financing and implementation.

The climate change challenge with its new requirement to reduce the “carbon footprint” of human activities everywhere in California is another compelling reason for more comprehensive regional *Blueprint* planning (for additional background see www.calblueprint.dot.ca.gov). Without a wide-ranging consideration of the interrelationship between the activities of living, work, mobility, recreation and other realities of urban life, the prospects for reducing greenhouse gasses are very limited.

Current funding practices typically evaluate competing projects by comparing the cost-benefit ratios for each project, measuring the outputs as a way of setting priorities. By contrast, the comprehensive approach we are now recommending measures outcomes as a new way of setting priorities. Outcomes consider a broad range of inputs, not simply the outputs of one project. Accordingly, investments within a comprehensive *Blueprint* framework can be directed to regional and local projects that go farther to reach the overall goals of a watershed or larger-scale planning and management area. The shift is from a piecemeal approach to one much more holistic.

A more holistic approach recognizes a mix of the elements that must be aligned for better regional outcomes. The elements include transportation infrastructure, air quality resources, land use planning, economic development, open space protection, and solid waste and water resources management. Some of these elements are planned within political jurisdictions while others are defined by basins or watersheds. These variations suggest the need for a new framework in which comprehensive regional and local planning and implementation can be done.

As with SCAG’s other mandated planning efforts, performance-based outcomes are an important tool to ensure effective implementation. Performance outcomes can avoid the one-project-at-a-time syndrome that has characterized growth and resources management in the past. A performance-based plan requires that certain system-wide goals be achieved, and within that framework projects can be selected based on their contribution toward those goals. Performance outcomes also allow flexibility in project criteria and management, as progress toward the goals is monitored and program requirements are adjusted as necessary.

Attachment: “Water and California’s Future: Getting into the Bigger Picture of Growth, Resources and Sustainability”

FISCAL IMPACT:

The consideration of this topic creates no fiscal impact on SCAG. Staff support for the Water Policy Task Force is funded through work elements in the OWP (Environmental Planning and the Regional Comprehensive Plan).

MEMO

DATE: November 29, 2007

TO: Water Policy Task Force

FROM: Daniel E. Griset, Program Manager, 213.236.1895, griset@scag.ca.gov

SUBJECT: Proposed Ventura County Stormwater Permit

BACKGROUND:

Since 1992, the 10 cities, the Ventura County Watershed Protection District, and the County of Ventura have worked collaboratively to meet clean water regulations as the Countywide Stormwater Program (Program). Each of these public entities operates separate municipal storm drain systems and discharge stormwater under the Ventura Countywide Stormwater NPDES permit (Permit). The first municipal stormwater Permit for Ventura County was issued in 1994; the second was issued in 2000. In 2003, the Ventura Countywide Stormwater Program received U.S. EPA's National Clean Water Act Award for Stormwater Management Excellence. This award-winning Program, a model of water quality protection in Ventura County, highlights our community's support for clean water and safe beaches.

In December 2006, the Los Angeles Regional Water Quality Control Board (LARWQCB) released a Draft 2006 Permit that may be considered the strictest in the nation. There are approximately 75 new or additional requirements identified in this regulatory proposal. The Ventura County Stormwater Program supports the intent of several requirements in the Draft Permit where they aim to lead to cleaner water and promote environmental sustainability. Other requirements, however, are considered by officials in Ventura County as potentially counterproductive and prohibitively expensive. In these instances, this officials are proposing alternative approaches that both protect water quality and are financially feasible.

Points of Concern:

Trash: The Regional Board's current Draft Permit requires the installation of screens at storm drain inlets in high-trash-generating commercial and industrial areas, and near educational institutions. The purpose is to prevent entry of any materials larger than 5mm. One-time installation costs are estimated to reach into the hundreds of thousands of dollars countywide. As a result, the Program is requesting alternative language that would allow for a trash maintenance program to include additional litter pick-up, street sweeping, placement of additional trash cans in high commercial areas, and the installation of screens only in areas not prone to flooding.

Municipal Action Limits: The Draft Permit is the first in the nation to require that stormwater runoff from storm drains meet pollutant levels (referred to as Municipal Action Limits). Failure to meet these limits could lead to fines of up to \$27,500 a day. The Draft Permit limits are based upon national averages of communities that have higher annual rainfall than typically experienced in Southern California. Consultants hired by the County's Program have indicated that 80 percent of the Program's storm drains will fail to meet the Municipal Action Limits contained within the Draft Permit. With the many pollutant sources in neighborhoods, it is thought that compliance will require very expensive end-

of-pipe treatment. This is more difficult where pollutant sources such as schools and agriculture are outside of the Program's jurisdiction and control. Accordingly, the Program is requesting that Municipal Action Limits be used as an assessment tool rather than a compliance point. The Program is also requesting the limits be established based upon extensive Southern California data developed over the past 15 years.

Land Development: The Draft Permit includes extensive new requirements for new and redevelopment projects. The Program is concerned these requirements will make it more difficult to implement Smart Growth development principals, which provide a more environmentally sustainable way for public entities to provide needed housing.

Total Maximum Daily Loads (TMDLs): Several TMDLs have been adopted (and many others are proposed) for the Calleguas and Malibu Creeks, Santa Clara and Ventura Rivers, and other coastal watersheds and beaches. For the first time, the Draft Permit incorporates TMDLs through the Countywide Stormwater Permit. The cost of implementing these TMDLs is not fully known, but based upon the examples of TMDLs implemented in other areas of Southern California the cost is estimated to be in the tens of millions of dollars.

Cost: Based upon what Draft Permit requirements and what TMDLs are included in the final Permit, the total cost Countywide is anticipated to range from a low of \$60million to a high of \$140 million. As currently proposed in the Draft Permit, the Program is projected to cost upwards of \$400 per household for the full compliance scenario.

In the case of the City of Ventura where current annual stormwater management costs are about \$1.2 million, the new proposed requirements would raise these compliance costs to more than \$4 million annually. These new costs would relate to increased business inspections, development review and compliance, public outreach, storm drain inspections, reports and studies.

Funding Mechanism: Currently there is only one dedicated funding mechanism in place to cover stormwater costs in Ventura County, the Watershed Protection District's Benefit Assessment Program. In Fiscal Year 2006-2007, the entire Program reported costs of approximately \$13.5 million. Benefit Assessment revenues collected and distributed amounted to only \$1.63 million (approximately 12 percent of cost) that year. The cost to the Principal Program (includes Program Administration and Reporting, Public Outreach and Water Quality Monitoring) for compliance with the Draft Permit is estimated to be \$3.4 million (double the cost under the current permit). There is no available funding mechanism at this time to cover the additional or future costs for this program.

Future Steps

The LARWQCB released a second Draft Permit on August 28, 2007 that is currently in a public review process. It is expected that the Board will take action to adopt a new five year permit in early 2008. Observers of this Ventura County process have noted that the actions taken by the Board on this permit will likely influence every stormwater permit around California, including those in the SCAG region. Of special significance is the potential for the inclusion of numeric limits in future permits, a provision that would require local governments to implement costly treatment of stormwater before it has any contact with creeks and rivers and the ocean.

FISCAL IMPACT:

The consideration of this topic creates no fiscal impact on SCAG. Staff support for the Water Policy Task Force is funded through work elements in the OWP (Environmental Planning and the Regional Comprehensive Plan).

MEMO

DATE: November 29, 2007

TO: Water Policy Task Force

FROM: Daniel E. Griset, Program Manager, 213.236.1895, griset@scag.ca.gov

SUBJECT: The Connection between Water, Food and Agriculture, Growth and Climate Change

BACKGROUND:

As urban regions grow the future interplay between cities and farms becomes increasingly critical. This interplay involves both land and water resources, food supplies and water allocations. The interplay is not always competitive; it can be complementary and/or interdependent.

In the matter of land use it is easy to note that as areas in the SCAG region grow there are pressures on farming operations that eventually lead to the loss of farm land and the agricultural production that land has produced historically. Instead of crops or other food production, that land produces homes and industry and other businesses. These changes have a variety of impacts, ranging from water uses to food production to environmental sustainability.

Though agricultural production in the SCAG region and in other parts of California has worldwide importance, the region's urban growth is challenging some parts of the agricultural future as land is converted to new uses and urban water demands drive up the value of irrigation water. Both of these forces can be destabilizing forces on current agricultural practices.

The emergence of climate change also is a factor on agricultural futures and the viability of production and crops in specific climates and conditions around the world. (A recent informative Washington Post article on the threats of climate change to farming and food production is attached to the agenda.)

Eric Stein, Deputy Secretary of Legislation and Policy of the California Department of Food and Agriculture, will brief the Task Force on these issues, including the relationship between water resources and food production, as well as the looming connection between agriculture and urban growth and climate change.

FISCAL IMPACT:

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MEMO

DATE: November 29, 2007

TO: Water Policy Task Force

FROM: Daniel E. Griset, Program Manager, 213.236.1895, griset@scag.ca.gov

SUBJECT: An Update on the California Green Building in the SCAG Region

BACKGROUND:

The California Green Building Program has been developed by the building industry to conserve resources and bring long-term environmental protection advantages to consumers. This Program features unique advantages in energy efficiencies, indoor air quality, on-site waste recycling and water and wood conservation.

Examples of higher energy efficiencies are the result of uses of improved insulation installation and heating, ventilation and air conditioning systems, tight ducting, and high-efficiency glazing. The energy goal is to improve efficiency standards by at least 15%.

In the water conservation area the Program goal is to have homes use at least 20,000 fewer gallons per year. In addition to water wise fixtures and appliances, the Program emphasizes new approaches to landscape development and irrigation in which drought tolerant plantings and weather-based irrigation controllers combine to bring down water demand substantially.

Wood conservation in the Program involves the careful selection and use of wood products from forests overseen by the Sustainable Forestry Initiative, the American Tree Farm System, the Canadian Standards Association's Sustainable Forest Management System or the Forest Stewardship Council. This corresponds with the Program's commitment to work with managed forest timber where cuttings are limited to a rate that can be permanently sustained, while leaving the ecological functions intact, enhanced or restored. Along with these priorities, the Program favors special equipment and fabrication that reduce the use or waste of wood products.

The construction methods and use of materials also improve air quality in these Green Program homes. These aid in the improved filtration and elimination of air pollutants. Additionally, paints and lacquers and carpeting are selected that have low or no volatile organic compounds.

Another feature of the Program is the diversion of at least 50% of construction waste from landfills. Currently, residential new construction waste accounts for 20 to 30% of the solid waste generated in California each year. Eliminating this job site waste stream allows the construction industry to work more successfully with local agencies to comply with state recycling and waste-reduction requirements.

FISCAL IMPACT:

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ATTACHMENTS

- 1. Draft Policy Paper: “Water and California’s Future: Getting into the Bigger Picture of Growth, Resources and Sustainability”**
- 2. Washington Post Article (11-19-07): “Facing a Threat to Farming and Food Supply”**
- 3. Frequently Asked Questions about the California Green Building Program**

WATER AND CALIFORNIA'S FUTURE: GETTING INTO THE BIGGER PICTURE OF GROWTH, RESOURCES, SUSTAINABILITY

A Draft Policy Paper for Integrating Local and Regional Planning to Leverage Smart Public and Private Infrastructure Investments

Abstract:

The challenges presented by looming growth, piecemeal management of land and natural resources, emerging changes in climate, limited advances in environmental protection, shortages in public funding and pervasive institutional fragmentation require a new holistic approach to regional planning. This planning must be more comprehensive and more integrated. Without this new approach to planning, public and private fiscal capacities cannot be leveraged for better project selection and investment outcomes. Without this wider understanding of regional limits and opportunities, institutional capacities will remain disconnected and conflicted. Without this higher level of planning, it is doubtful that steadily growing regions will be environmentally sustainable. Without an appreciation for the interrelationships of land use, mobility, air quality, housing, water and natural resources and waste management, conventional planning efforts will fail to successfully meet the daunting challenges each urban region and watershed face.

Actions Recommended in this Paper:

- Integration of infrastructure and resource management planning within a performance-based regional *Blueprint* planning framework
 - Dedication of state and federal funding to advance regional *Blueprint* and related local planning efforts that advance system-wide environmental sustainability
 - Priority state and federal funding for projects that coordinate with comprehensive regional *Blueprint* and related local planning and that are financially constrained, performance-based and leverage local and private sector investments
-

Without thoughtful and committed guardians, California's future is now endangered, much like the Delta's smelt. The danger is fueled by demographics that project a 2050 population in California of nearly 60 million residents, people who will make their claims on water and other increasingly scarce resources. Notwithstanding these challenging realities, elected and other leaders have relied on decision systems that produce piecemeal efforts with stop gap measures rather than find new policy systems that are guided by comprehensive, long-term planning. Without new system thinking we can only expect that California's future will remain unguarded and endangered.

It is noteworthy that California's water future is now front and center in Sacramento with the Governor's call of the Legislature into a special session to update our state's water infrastructure and to complete missing elements of a state water plan that was not fully implemented some 50 years ago.

The Governor has proposed a \$9 billion water bond measure for consideration and other legislators will be offering alternative proposals. These measures will range from water storage with dams and reservoirs to cleaning up groundwater basins and recycling and reusing infiltrated water supplies. There will be calls for environmental investments in the Bay Delta ecosystem and flood control measures to prevent hydrological risks to communities that continue to grow on the Central Valley's flood plain. These proposals come soon after voter approvals last year of \$9.5 billion in state bonds with Propositions 84 and 1E, two measures with substantial water and environmental elements.

While new funding will eventually result in new water projects, guarding our future requires more than simply funding a hodge-podge of projects that survive intense short-range political bargaining. We need a better, more comprehensive context for investing our tax dollars wisely for the long-term. We need a context that brings together not only our future water needs but also transportation, housing, open space and habitat, air quality, solid waste, and emergency preparedness needs. We need thinking and planning and investing that goes beyond the challenge of getting competitive water agencies to collaborate, to one of multi-disciplinary planning and shaping of the regional growth in metropolitan areas. This means taking a leap to a new level in order to maximize the value our investments yield and to address our inevitable growth. That new level is something now emerging as "*Regional Blueprint*" planning.

The *Blueprint* concept represents a natural evolution towards holistic planning and implementation. The Clean Water Act gave rise to "areawide planning"; this was later supplanted by "continuous comprehensive planning" that is rarely continuous or comprehensive. The *Blueprint* concept brings forward a full menu of issues, along with stakeholders who can forge planning and implementation partnerships. The long-term payoff for this path is a much higher return on our public and private investments in the form of creative projects with multiple public benefits.

In 2006 voters approved some \$43 billion in bond funding across six areas: parks, water resources, transportation, housing, education and flood protection. With a *Blueprint* strategy we have a framework in which all the bond measures could be considered as one resource with six inter-related elements. These resources can be leveraged for multiple benefit outcomes because of coordinated regional planning strategies, avoided costs and the long-term economies of innovative implementation. With the water and flood protection elements this planning framework can align funding with land use and other regional objectives that are consistent with safety and environmental sustainability and prevent greater infrastructure losses and mitigation expenses later.

Other examples of integrated planning could be the smart investment in an education facility that brings energy and water conservation, along with better learning environments for training our work force to better compete in the global economy; or the innovative housing development that contributes open spaces to a community and saves stormwater for infiltration and reuse; or the coordinated land use and transportation investments that lower the demand for the vehicle usage that requires very expensive infrastructure and often brings harmful health impairments. Indeed, this kind of planning extends the usefulness of limited resources by anticipating collateral impacts and avoiding many of the costs caused by piecemeal planning that requires later mitigation and retrofitting.

With these considerations in mind, this paper now turns to more intensive discussion of future water and other resources in a region and world challenged with climate change and growth. Water management is one area where resource consumption, flood protection, growth, land use, and climate change all interact within a comprehensive planning process that seeks to produce environmentally sustainable outcomes.

Resource Implications of Climate Change

There is widespread scientific agreement that the planet is warming at a historically unprecedented rate, and that human activity is contributing to this warming. The regional impacts of climate change remain uncertain and difficult to predict. Adding to the uncertainty is the non-linear behavior of climatic patterns where large changes can occur suddenly and dramatically in response to small changes in system conditions. One recent study shows that drought, in particular, can begin suddenly in response to only small reductions in precipitation. The impacts of both drought and significantly increased rainfall can be catastrophic to agriculture, water supply, and flood-prone areas.

Climate change is expected to strongly impact the hydrological cycles of California, resulting in too much rain or not enough. These conditions would exacerbate patterns of flooding and drought. Among the uncertain results of climate change, there are several highly probable impacts:

- Warmer annual temperatures will cause more precipitation to fall as rain instead of snow, resulting in reduced annual snow pack and earlier seasonal melt times. This has two significant implications:
 - Reduced snow pack in the Sierras means that less water will be available in late spring and early summer, effectively shortening wet winters and lengthening dry summers.
 - Increased rain and an earlier seasonal snowmelt will combine to elevate flood risks, as significantly more water flows into mountain streams and rivers in the winter and early spring.
- Weather extremes in wet and dry areas will occur with greater frequency. This means that while areas prone to flooding are at elevated risk levels, so are areas prone to drought. Recent drought in the American southwest and historically unprecedented flooding in Asia are graphic examples of what might be expected. Inland southern California, northern Mexico, and parts of the Colorado basin – already in a long drought cycle – may see no relief from low precipitation, even as heavy rains fall on coastal California.
- Sea level rise threatens low-lying coastal communities, including much of the San Francisco bay area, with permanent flooding and massive loss of property and available land.
- Sea level rise, in addition to its land use and economic impacts, threatens coastal aquifers with saltwater intrusion, rendering freshwater undrinkable and much more expensive to purify. Many of the aquifers of the California Coastal Basin are threatened in this manner.
- Increased runoff and elevated water temperatures both negatively impact water quality. Increases in runoff usually correspond with increases in pollution levels. Higher water temperatures deplete oxygen but disperse metals and chemicals more widely with significant effect on aquatic habitat and dependent biota.
- Higher volumes of water can overwhelm ecosystem capacities to hold, filter, cool, and slow water moving through the hydrologic system with the result that water quality is degraded, flood risks increase, and groundwater recharge is reduced.

Decreases in inland precipitation, a shorter precipitation cycle in the winter, and less snow in the Sierras and the Rockies would combine to not only reduce the amount of water available to California but also

shorten the ‘window’ of time in which water is available. Changes in the winter precipitation and runoff cycles would also present an enormous challenge to the state’s flood control and conveyance systems.

Flood Implications

Increased annual alpine precipitation, falling as rain instead of snow –combined with earlier annual snow melt – is certain to raise the risk of flooding in the winter and early spring. If current development patterns and practices continue in flood prone areas, ever increasing numbers of people and their property will be threatened with major losses. These risks will be especially acute in areas such as the Sacramento Delta, where extensive development continues to occur in the flood plain. These risks also appear in alluvial fan areas at the foot of mountains where storm flooding can be precipitous and devastating.

Significant additional strain will be placed on the existing flood control system to cope with higher stream and river levels and increasingly chaotic weather patterns. These dangers will be compounded by the projected rising sea levels triggered by climate change. The extent of sea level rise will depend in part on how much the planet warms, but current projections are for at least a one meter rise within the next 90 years. This would significantly impact the San Francisco bay area, including – again – the Bay Delta.

Saltwater intrusion, sea level rise, heavy rains and flooding, dangers of levee failure, wetland ecosystem destruction, and constrained imported water supplies: all of these predicted potentials call for regional planning frameworks in which orderly steps can be taken to protect and maximize natural resources and to create investment strategies that build sustainable communities with improved qualities of life. This creative approach will bring forward the kinds of investments and actions that not only have multiple benefits—public and private—but also prevent large-scale regional calamities that will endanger California’s future.

Such approach must include all of the factors that influence water supply, quality, and flood risk, including land use, growth patterns, transportation, residential density, on-site water management, open space, and housing affordability. As such, success will require more than just water planning and engineering. It will require the kind of comprehensive, integrated watershed planning and management that uses new governance approaches. These governance approaches, if they are to be effective, must be sized to match the scale of challenges across the adjacent watersheds that form our emerging socio-economic and geophysical “Megaregions”.

The statewide imperatives for this creative regional leadership, planning and implementation are critical. Since the resource futures of northern and southern California are linked and inseparable they will call for even greater levels of cooperation in large-scale resource planning. Only with this statewide frame of reference can we attain possible sustainability of the state’s major metropolitan areas.

Resource Implications of Growth

Though growth and development are not forces which can be stopped, they are forces that can yield many benefits when managed effectively. Global urbanization is impacting every metropolitan area in the world. With people flowing into cities by the tens of millions we are seeing the greatest migration in human history. The structure of urban form itself is changing as a result, with individual cities merging into vast, integrated metro regions. In many parts of the world, these mega-regions are beginning to

supplant nations as the main drivers of the global economy. This concentration of people in urbanized areas can have positive or negative effects on the use of resources, depending on how growth and open lands are managed and protected.

California's projected growth raises many of these same concerns about the forms this growth takes and implications of these forms on use of resources. Will our growth be concentrated in areas served by essential, existing infrastructure, or will it sprawl out into rural and natural areas, such as farms, forests, and deserts? Both southern and northern California have seen the rate of land development far outpace the rate of population growth. This trend has resulted in huge losses of prime farmland, valuable habitat, recreation areas, and the ecosystem services these lands provide.

California has recognized the need for its fast growing regions to plan for and manage growth in ways that utilize land and resources efficiently. The state created the regional *Blueprint* Program to promote new approaches that can better guide the preparations for this growth future. Metropolitan Planning Organizations and other entities around the state have responded to this call for comprehensive planning by launching new regional planning initiatives that broadly consider the key inter-relationships of air, land, housing, transportation, water, solid waste, open space and habitat, the economy, and emergency preparedness. For example, SCAG's Compass *Blueprint* strategy, a companion effort to development of an updated Regional Comprehensive Plan, presents a vision where the region's future growth can be accommodated in less than 2% of the total land area by focusing it in existing centers and transit corridors. Thirteen other regions around the state have undertaken similar efforts within the *Blueprint* framework.

This planning framework is guiding the update of SCAG's Regional Transportation Plan and other planning efforts that serve to reduce greenhouse gas emissions and protect natural resources as growth occurs. SCAG already uses this preferred growth strategy to guide transportation investments, focus housing needs, and plan for air quality attainment. Using this growth strategy also addresses the region's ability to successfully meet its obligations under AB32 and PM 2.5 attainment. All of these investment and resources areas are subject to Program Environmental Impact Reviews.

With climate change and persistent environmental challenges impacting water resources in every region of the state, it is clear that water resource planning is an essential piece of the large-scale planning in the *Blueprint* Program. How growth is directed and managed has enormous implications for the state's water future. Concentrated growth, in transit-oriented and "walkable" (pedestrian friendly) communities, utilizes resources more effectively. Growth dispersal requires development of extensive and costly new infrastructure, increases landscaping demands, increases impervious surface in every watershed, and separates water treatment facilities from consumers, making recycling and reuse more difficult. Dispersed development also consumes valuable open space, which has significant consequences for water supply, as groundwater recharge areas are covered with impervious surface.

Unmanaged and dispersed growth also contributes to degraded water quality. As stormwater runoff collects pollutants from developed land, it flows into creeks and streams and rivers, eventually contaminating our harbors, bays, and oceans. Watershed planning studies show that water quality is impaired when more than 10 percent of a watershed is covered with impervious surfaces; at 30 percent of impervious cover, water quality in that watershed will be severely impaired.

Concentrated growth patterns also have a salutary effect on the interrelationships between transportation, greenhouse gasses, and water supply. Reducing automobile trips, with attendant

reductions in greenhouse gasses and climate change impacts, will result in less severe pressure on the state's water supplies and infrastructure in the future. Concentrating development also improves energy efficiencies, further reducing greenhouse gas emissions and associated water resource impacts.

Water Resources Management

It is important that the *Blueprint* growth management principles now be integrated with regional resource planning and implementation. This represents a higher level of integration than mere agency cooperation in competition for project funding within water management areas. This integration requires a state-endorsed, locally driven and regionally comprehensive planning framework that brings various actors and interests out of their silos and into large-scale collaboration.

Some guidance for developing this kind of framework is in the findings of two recent studies done by the National Academy of Public Administration (NAPA), one focused on new ways to set budget and project priorities for the Army Corps of Engineers and the other on the need for a "systems" approach with USEPA actions if environmental protection is going to be achieved in water quality. Both studies developed their findings within the context of comprehensive watershed planning and management and the importance of minimizing conflicts and encouraging collaborations.

The systems approach means a shift in philosophy and measurements of success from achieving project goals to achieving system-wide goals, from measuring project outputs to system outcomes. The focus of investment and planning decisions needs to be overall performance outcomes, not simply project completion. This approach results in both better projects and in a ranking system for prioritizing projects, based on their benefit in furthering system-wide goals and making more effective use of economic and natural resources.

In the absence of such a planning framework, competing interests battle for control of projects, while the health of the larger system is ignored. In a systems approach, competing interests are balanced by an objective priority development process focused on consensus-derived goals.

Such a planning framework begins with the formation of those system-wide goals, created through a multi-stakeholder engagement process that identifies the key issues, goals, and performance measures that will be used in creating a resource management plan. The effectiveness of resource plans that are linked with performance outcomes is seen in their ability to meet both short-term and long-term goals. Without this linkage, short-term and long-term goals are often in head-to-head competition for attention and investment. Conversely, with this linkage, a project prioritization strategy (short-term goals) aids in identifying and implementing projects that further the system-wide outcomes (long-term goals).

In order to deal with the uncertainty inherent in the long-range planning, in addition to the added complications of growth and climate change, this planning framework needs a management tool that provides a measure of stability and improves the plan's efficacy. That tool, as described in the NAPA findings, is adaptive management: an ongoing, iterative technique that allows the planning and implementation processes to be improved and corrected on an ongoing basis. Adaptive management eliminates the need to create an entirely new plan when shifts in conditions or direction occur.

It is essential that a large-scale process like this be implemented at the regional level. Water and natural resource issues are at the watershed and multi-watershed scale. Usually this scale is quite indifferent to

political boundaries, particularly when growth impacts occur across these boundaries. Accordingly, effective watershed-scale planning has several characteristics:

- It has a geographic scope sufficiently large to address all impacts
- It focuses on addressing multiple objectives
- It is based on the health of the entire system
- It is a participatory and inclusive process, involving the full range of watershed stakeholders and the public
- It utilizes the best available science in setting goals and outcomes, and in monitoring efforts
- It is feasible, flexible and adaptive, and is driven by performance outcomes within financial constraints

Getting Real About Cooperative and Continuous Comprehensive Planning

In order for this scale of regional watershed planning to succeed, the state must link state and other funding and approvals to a proposed project's consistency with its regional *Blueprint* planning process. Since this scale of planning is only now emerging, these efforts will need coordination between the ongoing efforts of state water planning and *Regional Blueprint* planning. Support will be needed to assist with this integration as a more comprehensive program is established. This support, at least in the near term, will be the most effective way for the state to exert constructive leadership in areas of policy and planning related to growth and resources, smart infrastructure, and environmental sustainability.

This new kind of planning process will require a new level of creative interchange between public and private interests and other institutions. It will depend on broad participation in policy development and plan priorities that are unprecedented within most regions. Without this extensive degree of participation any plans or policies will fail to develop the depth of "ownership" that are indispensable to a *Blueprint's* credibility and capacity to guide public and private investments.

Creative interchange across such a wide landscape of interests and institutions will certainly face very real complexities and difficulties: it will challenge deeply rooted patterns and inertias that now operate in a dispersed planning environment where individual projects face funding rivalries and the potentials for local partisanship-pro and con.

These difficulties can be best addressed by the presentation to all regional stakeholders of thorough assessments of current trends, along with alternative future scenarios within each region, much as is now done in Regional Transportation Plans with alternatives analysis. With these assessments, regional decision makers would have information needed for holistic thinking and planning in a more expansive (regional) jurisdictional context.

Essential to the success of these efforts, however, is the collaborative nature of the process. Conflicts that frequently occur between "regulators" and "the regulated" are examples of existing dysfunctional patterns that divert energy and effort from problem solving and constructive progress. Larger scale problem assessments and resolution, considering serious fiscal and other constraints, put a high premium on collaboration rather than conflict.

Regional growth trends, transportation investments, and air quality conformity are already integrated into the Regional Transportation Plan policy framework, since the goals of all three areas are interrelated. Resource planning is also interrelated, but has, until now, been left out of this mix. Water

planning is also integrated, insofar as water and other agencies are beginning to work together to forge common goals for watershed management and related projects. The California Resources Agency has been making efforts to combine resource planning with growth and transportation objectives, just as water resource planning should now be integrated into the *Blueprint* planning process.

The water community of California will require state guidance and support to integrate its planning efforts into this larger framework. Supplemental grant money should be made available to water planning agencies to integrate their planning efforts with the *Blueprint* process. Furthermore, the state needs to support this expanded *Blueprint* process by requiring the inclusion of integrated water resource planning in the larger *Blueprint* policy strategy.

In order to create a realistic framework for planning and implementation, it is essential that these efforts operate within a context of financial constraints, much as transportation infrastructure planning operates within a financially constrained model. Separate funding streams currently exist for water planning and regional *Blueprint* planning. Integrating these processes would increase the overall funding stream and likely create some external economies of scale for stretching planning dollars further.

Part of the funding model for Metropolitan Planning Organizations (MPOs) is a cross-governmental funding stream, combining federal, state, and local monies and professional resources. This is another source of funding for integrated planning efforts that uses a financially constrained model that favors realism and can leverage local and federal funds with state investments. Combining existing funding streams and using them to leverage additional matching funding from local and federal government can go that much further to close the fiscal funding gaps noted in the NAPA paper and infrastructure budgets everywhere.

Characteristics of Cooperative and Continuous Comprehensive Planning

The regional *Blueprint* planning horizon needs to be 20 years or longer. A Plan must of course account for the unique characteristics of each region, highlighting areas with specific needs, such as the Bay Delta estuary in the Central Valley. Goals, targets, and performance outcomes would be developed among the regional stakeholders that target those regional needs and create strategies and alternatives to accomplish the regional goals.

A more comprehensive *Blueprint* Plan and strategy would be a broad policy document that defines the region's goals for the system, recognizes its challenges, and identifies agencies and inter-agency groups responsible for addressing those challenges and achieving the goals. Those agencies and other appropriate entities can then develop projects that best achieve the system goals. When done successfully, agencies are clear about the goals, what the performance outcomes are, and which agency (or agencies) is responsible for implementation and monitoring. As results from projects are evaluated against long-term goals and emerging scientific knowledge, project selection criteria and prioritization can be shifted as needed, within the larger, flexible, strategic *Blueprint* Plan.

2. Facing a Threat to Farming and Food Supply

By Rick Weiss
Washington Post Staff Writer
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Climate change may be global in its sweep, but not all of the globe's citizens will share equally in its woes. And nowhere is that truth more evident, or more worrisome, than in its projected effects on agriculture.

Several recent analyses have concluded that the higher temperatures expected in coming years -- along with salt seepage into groundwater as sea levels rise and anticipated increases in flooding and droughts -- will disproportionately affect agriculture in the planet's lower latitudes, where most of the world's poor live.

[India](#), on track to be the world's most populous country, could see a 40 percent decline in agricultural productivity by the 2080s as record heat waves bake its wheat-growing region, placing hundreds of millions of people at the brink of chronic hunger.

[Africa](#) -- where four out of five people make their living directly from the land -- could see agricultural downturns of 30 percent, forcing farmers to abandon traditional crops in favor of more heat-resistant and flood-tolerant ones such as rice. Worse, some African countries, including [Senegal](#) and war-torn [Sudan](#), are on track to suffer what amounts to complete agricultural collapse, with productivity declines of more than 50 percent.

Even the emerging agricultural powerhouse of [Latin America](#) is poised to suffer reductions of 20 percent or more, which could return thriving exporters such as [Brazil](#) to the subsistence-oriented nations they were a few decades ago.

And those estimates do not count the effects of new plant pests and diseases, which are widely expected to come with climate change and could cancel out the positive "fertilizing" effects that higher carbon dioxide levels may offer some plants.

Scenarios like these -- and the recognition that even less-affected countries such as the United States will experience significant regional shifts in growing seasons, forcing new and sometimes disruptive changes in crop choices -- are providing the impetus for a new "green revolution." It is aimed not simply at boosting production, as the first revolution did with fertilizers, but at creating crops that can handle the heat, suck up the salt, not desiccate in a drought and even grow swimmingly while submerged.

The work involves conventional breeding of new varieties as well as genetic engineering to transfer specific traits from more resilient species. As part of those efforts, scientists are also busily preserving seeds from thousands of varieties of the 150 crops that make up most of the world's agricultural diversity, as well as wild relatives of those crops that may harbor useful but still unidentified genes.

"For agriculture to adapt, crops must adapt," said Ren Wang, director of the Consultative Group on International Agricultural Research, a network of agricultural research centers. "It's important that we have a wide pool of genetic diversity from which to develop crops with these unique traits."

At the same time, scientists are finding that agriculture and related land uses, which today account for about one-third of all greenhouse gases emitted by human activities, can be conducted in much more climate-friendly ways.

But time is of the essence if a worldwide crisis in food security is to be avoided, said William R. Cline, a senior fellow at the Center for Global Development and the Peterson Institute for International Economics, Washington-based nonpartisan economic think tanks.

"You'll have a tripling of world food demand by 2085 because of higher population and bigger economies, and I would not be surprised to see as much as one-third of today's agricultural land devoted to plants for ethanol," Cline said. "So it's going to be a tight race between food supply and demand."

The work of developing adaptive plants has begun to pay off. Researchers have discovered ancient varieties of Persian grasses, for example, that have an incredible tolerance for salt water. The scientists are breeding the grasses with commercial varieties of wheat and have found they are growing well in [Australia](#)'s increasingly salty soils.

Other research is building on the recent discovery of a gene that helps plants survive prolonged periods underwater.

Even rice, which grows in wet paddies, will die if it is fully submerged for more than three or four days, said Robert Zeigler, director general of the International Rice Research Institute in [the Philippines](#). But recent tests on farms in [Bangladesh](#) show that a new line of rice containing the flood-resistance gene can live underwater for two weeks.

That's going to be important, Zeigler said, because 70 percent of the world's poor live in [Asia](#) -- most of them in south Asia -- where rice is the staple. Yet 50 million acres of that region are already subject to seasonal flooding that can temporarily submerge plants under 10 to 12 feet of water. And the problem is predicted to worsen as climate change brings more intense rainfall there.

"Crops grow in weather, not in climate," Zeigler said, meaning they must be able to survive not only the anticipated average rises in temperature but also the day-to-day extremes that come with climate change.

Corn is another staple that is getting gussied up to party with the hardy -- in this case in preparation for dry spells, which are predicted to increase in Latin America and other corn-growing regions, with a potential 20 percent drop in production over the next 25 years.

Recent tests in [South Africa](#) showed that drought-resistant maize plants, created by breeding, produced 30 percent to 50 percent more corn than traditional varieties under arid conditions. But the real test, scientists say, will be to splice in potent drought-resistance genes from plants such as sorghum and millet, which are famously productive even in parched, [sub-Saharan Africa](#). That assumes consumers and regulators will accept such engineered crops, which have been shunned in many countries because of economic and environmental concerns.

To the extent that plants cannot adapt to change, farmers will have to. In [Uganda](#), where coffee is an important cash crop but where temperature increases are expected to devastate the plants, researchers are hoping that by planting shade trees, growers can preserve the industry while perhaps even increasing biodiversity.

In other parts of Africa, farmers are being taught to add fruit trees to their subsistence farms. The trees can survive droughts and waterlogging better than crops planted annually, and so can serve as an economic bridge across hard times.

Farmers in developed countries must also prepare, experts say.

A recent study by researchers at the International Maize and Wheat Improvement Center in [Mexico](#) concluded that wheat growers in [North America](#) will have to give up some of their southernmost fields in the next few decades. But they will be able to farm a full 10 degrees north of their current limit, which extends from Ketchikan, [Alaska](#), to Cape Harrison, Labrador.

That means amber waves of grain will be growing less than 2 degrees south of the [Arctic Circle](#), and [Siberia](#) will become a major notch in the wheat belt.

By changing their practices, and not just their crops, farmers can also temper the buildup of greenhouse gases. New technologies that measure soil nutrient levels are allowing farmers to add only as much fertilizer as is really needed -- important because the excess nitrogen in those chemicals gets converted in the soil into nitrous oxide, which has 300 times the greenhouse activity of carbon dioxide.

Studies also show that by plowing or tilling less frequently -- planting seeds in the stubble of a previous crop, for example -- farmers can significantly reduce evaporation in dry areas and also cut the amount of carbon dioxide released from the soil (and from the exhaust of their tractors, if they have them).

Crops grown this way also trap carbon more effectively, becoming part of the solution instead of adding to the problem.

For the truly pessimistic, there is always the "doomsday vault," a seed bank being constructed in a Norwegian mountainside that nations around the world are stocking with every kind of seed imaginable.

After all, you never know what kind of plant trait is going to save humanity if the climate makes an unexpected turn, said Cary Fowler, executive director of the Global Crop Diversity Trust, which is leading the effort and who has boasted that the vault will be protected in part by the region's polar bears.

That is assuming, of course, that rising temperatures or the newly arrived wheat farmers will not have driven them away.

3. Frequently Asked Questions about the California Green Building Program

Q: Aren't there a lot of "green" programs out there? What's so special about California Green Builder?

A: Yes. Many are points-based, complicated and driven by outside groups. California Green Builder keeps the building industry in charge of the agenda, helps localities meet mandates in water and wood savings and waste diversion, and is voluntary. It includes independent third party inspections and diagnostic testing of energy features.

Q: Don't homes built under "green" program guidelines cost more to build?

A: Many green building techniques can be applied at little or no extra cost. Additionally, heating, cooling, and water use in green buildings often cost less so up-front costs to buyers can be offset in the long run.

Q: Isn't "green" building more complicated?

A: The requirements for CGB include building to exceed energy efficiency standards; diverting at least 50% of construction and jobsite waste; reducing water use by at least 20,000 gallons compared to contemporary "non green" homes; and include guidelines for efficient lumber and wood usage. Many builders are nearly meeting CGB standards without knowing it.

Q: Why should builders want to build under the CGB guidelines? What's in it for them?

A: Many builders are already building partially green, and there are many advantages. CGB builders may get fee deferrals and enhance their opportunity to build or achieve higher densities. CGB offers marketing support, sponsorship support, certificates, and possible recognition from elected officials. CGB is a great opportunity for builders to be perceived as even more socially responsible stewards of the environment. Additionally, CGB quantifies energy and resource savings that CGB builders can use as a selling tool.

Q: Isn't it true that consumers aren't concerned with building "green"?

A: No, recent studies have shown that many homebuyers want green homes. People want lower ozone-depleting gas emissions, sustainable forests, and less landfill waste. Builders report that "green" homebuyers have higher satisfaction, knowing they have done something good for the environment.

Q: What kind of research do you have that backs up your claims that "green" homes really help the environment?

A: CGB was conceived and created by The Building Industry Institute (BII), the research arm of the California Building Industry Association (CBIA). The BII continues to research and monitor crucial elements of green building techniques and make that data available to CGB program builders. The BII also conducted extensive literature research to verify and quantify the benefits for incorporated measures.

Q: How does building "green" improve the environment?

CGB Homes use 15-20 percent less energy than homes built to California's exacting Title-24 requirements. It is estimated that for every 100 CGB homes save on average 70 therms of gas and 700 kWh, resulting in saving 137,100 lbs of CO₂.

CGB homes reduce water usage by at least 20,000 gallons/year compared to contemporary "non-green" homes. Additionally, water delivery and treatment costs are reduced by building green, benefiting the public. Homeowners pay reduced water bills.

During construction, builders divert at least 50 percent, sometimes as much as 80 percent of their on-site construction wastes. This reduces landfill consumption and helps create new uses for second-hand products.

CGB homes have better indoor air quality because of advanced HVAC designs, MERV filters and increased use of low VOC materials.

Four credible, sustainable forest certifiers are included in CGB, including the Sustainable Forestry Initiative (SFI), the American Tree Farm System (ATFS), the Canadian Standards Association's Sustainable Forest Management System Standards (CAN/CSA), and the Forest Stewardship Council (FSC). Other sustainable forest certifiers may be included when warranted.

Q: What is a California Green Builder home, exactly? What are the requirements?

Higher Energy Efficiency Standards

CGB homes are designed and built to exceed California's stringent Title 24 energy efficiency standards by at least 15%. CGB homes will feature:

Improved insulation installation

Engineered HVAC systems

Tight HVAC Ducts

High-efficiency glazing (SHGC and U-value < 0.40)

Independent third-party inspections and diagnostics of energy features

Water Resource Conservation

CGB homes use at least 20,000 gallons less water than similar, newly constructed "non green" homes by featuring:

Innovative plumbing systems and fixtures such as

- o Parallel hot water piping; or
- o Hot water recirculation system
- o Ultra-low flow toilet(s) (= 1.28 gpf)
- o High-efficiency clothes washer as a buyer option (water factor ≤ 6.0)

New designs for landscaping and irrigation such as

- o Weather-based irrigation controllers that provide only the amount of water required to sustain the landscaping (Smart Controller)
- o Front yard landscaping with a maximum of 75% turf, drought tolerant plants, and a high-efficiency drip irrigation system

OR

Enrollment in the Metropolitan Water District of Southern California's California Friendly water conservation program. For more information, visit www.bewaterwise.com. (Rebates may be

applicable to MWD customers only. Other water districts may offer similar rebates and programs)

Wood Conservation

Certified wood products that come from forests overseen by SFI, ATFS: CAN/CSA or will qualify under CGB.

Improved Indoor Air Quality

CGB Requires ACCA design protocols be used to ensure comfort and adequate ventilation. In addition, Minimum Efficiency Reporting Values (MERV) 6 filters and use of low/no Volatile Organic Compounds (VOC) help improve indoor air quality.

Waste Diversion

CGB requires that at least 50% of on-site construction waste be diverted from landfills. This helps communities meet their AB 939 mandates.

Q: Don't "green" homes look like something out of the Flintstones? What creature comforts do I have to give up to live "green"?

A: No, CGB homes look and feel just like traditional homes, except they use less energy, help power plants to emit fewer greenhouse gases, conserve water and wood, send less solid waste to landfills, provide better indoor air quality, and save homebuyers money on energy and water bills.